CBCS SCHEME

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Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Electrical and Electronic Measurements

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. List the limitations of wheatstone Bridge and explain how low resistance is measured by KDB. **(08 Marks)**

   b. With a neat circuit diagram derive the balancing equiaton for Maxwell Inductance – Capacitance Bridge. **(06 Marks)**

   c. A Maxwell's capacitance bridge shown in Fig Q1(c) is used to measured an unknown inductance in comparison with capacitance. The various values at balance, $R_2 = 400\Omega$; $R_3 = 600\Omega$, $R_4 = 1000\Omega$; $C_4 = 0.5\mu F$. Calculate the values of R_1 and L_1 calculate also the value of storage (Q) factor of coil if frequency is 1000 Hz. **(06 Marks)**
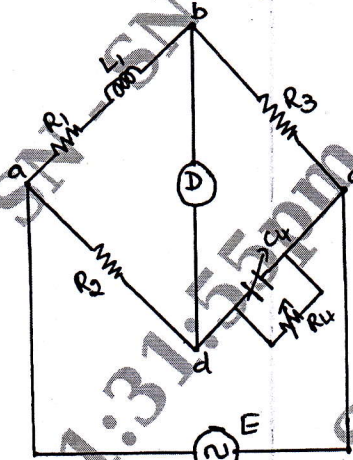

Fig Q1(c)

OR

2 a. Explain in brief fall of potential method for earth resistance measurement. **(08 Marks)**

   b. Describe the working of Schering bridge. Derive the equation for capacitance and dissipation factor. Draw the phasor diagram of the bridge under balance conditions. **(12 Marks)**

Module-2

3 a. Explain the construction and working principle of electrodynamometer Wattmeter for the measurement of power in the circuit. **(08 Marks)**

   b. Discuss the constructional features and working principle of rotating type phase sequence indicator. **(06 Marks)**

   c. A three phase induction motor draws a power input at a voltage of 250V, 20A, and 0.8 power factor lag. Find percentage error in wattmeter reading if ,
   i) Pressure coil is on supply side   ii) Current coil is on supply side. Assume current coil resistance and pressure coil resistance = 0.2Ω and 5000Ω. **(06 Marks)**

OR

4 a. Explain the error in a LPF Wattmeter and give the adjustments done to compensate for the error. (08 Marks)

b. Explain the working principle of Weston frequency meter. (06 Marks)

c. A 250V, single phase energy meter has a constant load of 5A passing through it for 8 hours at 0.8pf. If the disc makes 3200 revolutions during this period, what is Energy meter constant in revolutions per kilo-watt-hour? Calculate the pf of the load, if the number of revolutions made by the energy meter is 600, when operating at 250V, 6A for 2 hrs. (06 Marks)

Module-3

5 a. Explain the construction and theory of instrument transformer. (06 Marks)

b. Explain the characteristics of current transformer. (08 Marks)

c. Explain the measurement of magnetizing force (H). (06 Marks)

OR

6 a. What is shunt? How it is used to extend the range of an ammeter. (06 Marks)

b. With neat circuit diagram, explain Silsbee's method of testing C.T. (08 Marks)

c. Explain the measurement of leakage factor using search coil. (06 Marks)

Module-4

7 a. With a block diagram, explain the working of a true R.M.S responding voltmeter. (08 Marks)

b. With a block diagram, explain the working of a Ramp type DVM. (08 Marks)

c. List the advantages of electronic energy meter over the conventional energy meter. (04 Marks)

OR

8 a. List the performance characteristics of a Digital voltmeter. (07 Marks)

b. With a neat sketch, explain the working of the Q-meter. (07 Marks)

c. With a neat block diagram, explain the principle of working of electronic energy meter. (06 Marks)

Module-5

9 a. Explain LED and LCD displays. (10 Marks)

b. Write short note on nixie tube. (05 Marks)

c. Write a short note on strip-chart recorder. (05 Marks)

OR

10 a. Write a short note on types of segment displays. (06 Marks)

b. With a neat sketch, explain the working of a X-Y recorder. (08 Marks)

c. Write a short note on Null balance recorders. (06 Marks)

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